

Baby Bears Everywhere



Today you will take on the role of a research scientist studying the genetic diversity amongst different populations of bears. Your last research partner got eaten (RIP Stevie) when he got too close to your subjects, so find a new partner and refresh yourself on what your ultimate goal is: to better understand the inheritance patterns of a newly spotted group of bears...*gummy bears*.

Instructions:

1. Grab one bag of gummy bears for you and your partner. Depending on your initial population, there may be more than one bag you will need to observe.
2. Empty the bag and separate your bears into groups according to observable characteristics. If you have more than one bag **KEEP THEM SEPARATED**.
3. Go through your field guide, recording the necessary data in preparation for analysis.
4. Once you think you have determined your mode of inheritance, read, consider, and answer the questions in preparation for discussion.

Coding for lab (*not on student handout*):

Red: codominant, RR lethal (2, Rr)

Yellow: incompletely dominant with red (Y)

Orange: incomplete dominance offspring (RY)

white: codominant with red (2, W)

red/white swirl: codominant offspring (2, RW)

Red/yellow/orange can switch with blue/red/purple/green

Field Journal: Bears Expedition

Researchers: _____

Date: _____

Trait Being Observed: _____

Number of Bears Total:

Population Statistics: break down the number of bears exhibiting your chosen trait into smaller groups.
Choose symbols to represent your alleles.

Subpopulation				
Number				

Results:

Numbers of each	Ratio	Possible Genotypes	Mode of Inheritance	Possible Parental Crosses

Answer the following questions on a separate sheet of paper; written answers must be typed, but figures may be hand-written.

1. What type of inheritance does your population display? Create a well thought out hypothesis and justify it in relation to the content of this subunit.
2. What are all possible genotypes for each of the subpopulations that you found?
3. Using your available resources (your data and answers to prior questions,) figure out:

a. the potential genotype of each parent

b. what the phenotype of each was

while justifying your claims through mathematics and statistics (actual/ideal ratios, punnett squares, graphs, charts etc.)

4. Honors question: In addition to the question above, also include a Chi Square analysis of your population. Compare the observed and expected data and conclude if the difference is statistically significant.